REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed March 9, 2009 (Paper No. 20090216). Upon entry of this response, claims 1-16, 18-25, 33-34, and 36-39 are pending in the application. In this response, claims 1-2, 33-34, and 36-37 are amended, claims 38-39 are added, and claims 26-32 and 35 are cancelled. Applicant respectfully requests entry of the amendments herein and reconsideration of all pending claims.

I.   Claim Objections

Claim 30 is objected to because of a misspelling. Claim 30 is cancelled, and the objection is therefore rendered moot. .

II.   Rejection of Claims 1-5, 7-13, 18-19, 21, 25-26, 28, 32-33, and 35-37 under 35 U.S.C. §103

Claims 1-5, 7-13, 18-19, 21, 25-26, 28, 32-33, and 35-37 are rejected under §103(a) as allegedly obvious over *Chung et al.* (U.S. 6,195,760) in view of *Beukema et al.* (U.S. 2002/0124117). Independent claims 26 and 32 and dependent claims 27-31, and 35 are cancelled without prejudice, waiver, or disclaimer. The rejection of these claims is therefore rendered moot. Applicant reserves the right to present the subject matter of these cancelled claims, or variants thereof, in continuing applications to be filed subsequently. Applicant respectfully traverses the rejection of the remaining claims.

A. No Motivation to Combine *Chung et al.* and *Beukema et al.*

The motivation alleged by the Office Action (p. 5, 9, 12, and 14) is to "allow better control access to memory areas within a computer (paragraph 0008-0009)". Applicant submits that this motivation is improper. First, *Beukema et al.* does not describe its memory access mechanism as "better", as appears to be implied by the Office Action. The cited portions of *Beukema et al.* merely state that "[t]he present invention provides *a method, system and program for*

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controlling access to memory areas within a computer". Applicant submits that the characterization of *Beukema et al.* as providing "better control access" is merely a conclusory statement with no evidentiary support or reasoning. Second, the Office Action appears to assume that *Chung et al.* is deficient in the area of controlling access to memory areas. However, Applicant can find no suggestion in *Chung et al.* that a person of ordinary skill in the art would seek to improve "control [of] access to memory areas". Applicant submits that the assumption that *Chung et al.* is deficient in this area is merely a conclusory statement with no evidentiary support or reasoning.

Finally, Applicant notes that *Chung et al.* is directed to failure detection and recovery and that *Beukema et al.* is directed to remote DMA techniques. Even assuming that *Chung et al.* is deficient, the Office Action has not clearly articulated why a person of ordinary skill in the art would look to *Beukema et al.*'s teachings of remote DMA techniques in a System Area Network (SAN) to improve *Chung et al.*'s failure detection and recovery. Rather, it appears that the only suggestion or motivation comes from Applicant's own disclosure. As is well established in the law, such hindsight to the Applicant's own disclosure is *per se* improper. *See Crown Operations International, Ltd. v. Solutia, Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002) (a determination of obviousness cannot be based on a hindsight combination of components selectively culled from the prior art to fit the parameters of the invention). Applicant respectfully submits that "it is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teaching of the prior art so that the claimed invention is rendered obvious. … 'One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.'" *In re Fritch*, 972 FG.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992).

B. <u>All Claimed Features are not Disclosed</u>

It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest (either implicitly or explicitly) all elements/features/steps of the claim at issue. *See, e.g., In re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

1. <u>Independent Claim 1</u>

Applicant respectfully submits that claim 1 is allowable for at least the reason that the proposed combination of *Chung et al.* in view of *Beukema et al.* does not disclose, teach, or suggest at least the feature of "a remote direct memory write command from a primary process through the network interface, wherein the remote direct memory write command is preceded by a create request for the region".

The Office Action acknowledges that *Chung et al.* does not teach this feature, but appears to contend (p. 4) that *Beukema et al.*'s teaching (in para. 0048) of a write work queue element containing a gather list of local and virtual addresses of the remote memory space correspond to this feature. Applicant respectfully disagrees. Even assuming (for the sake of argument) that a gather list corresponds to a region of the persistent memory unit, and that the gather list is present in an RDMA write request, the mere existence of such a list in a write request is not the same as the specific feature recited in claim 1, namely, that "the remote direct memory write command is preceded by a create request for the region".

Accordingly, the proposed combination of *Chung et al.* in view of *Beukema et al.* does not teach at least this feature recited in claim 1. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection should be withdrawn.

2. <u>Independent Claim 10</u>

Applicant respectfully submits that claim 10 is allowable for at least the reason that the

proposed combination of *Chung et al.* in view of *Beukema et al.* does not disclose, teach, or

suggest at least the feature "storing access information for the checkpoint data…and providing

the access information to subsequent requestors of the checkpoint data".

The Office Action acknowledges that *Chung et al.* does not teach this feature, but

appears to contend that *Beukema et al.* discloses this feature, as follows:

> Beukema et al. teach an Address Translation Table that defines the
> virtual-to-real address mappings for the Memory Region (paragraph
> 0061), a RDMA read provides a memory semantic operation to read a
> virtually contiguous memory space on a remote node where a memory
> region references a previously registered set of virtually contiguous
> memory addresses defined by a virtual address and length (paragraph
> 0046), and where Bind Memory window provide the HCA hardware with
> the information required to change the access rights of a Memory Window
> (paragraph 0053-0054).
> (Office Action, p. 9.)

Thus, the Office Action appears to contend that the Bind Memory Window corresponds to the

claimed "providing the access information to subsequent requestors of the checkpoint data".

Applicant disagrees. *Beukema et al.* teaches:

> [0053] The mechanism that is used to provide the HCA hardware with the
> information required to change the access rights of a Memory Window is
> called a Bind Memory Window. A WQE that defines the parameters
> associated with a Memory Window is placed on a work queue.
> [0054] Referring now to FIG. 5, a diagram illustrating a Bind Memory
> Window is depicted in accordance with the present invention. The Bind
> WQE 501 at the head of the Work Queue 500 defines the characteristics
> of Memory Window 511. Work Requests 502 and 503 then invoke
> operations that access Memory Window 511. These operations could be
> remote accesses such as RDMA, where Work Request 502 could inform
> the remote node, the virtual address, and the R_Key associated with
> Memory Window 511, to use the RDMA operation.

Thus, *Beukema et al.* teaches that a Bind Memory Window defines "the parameters associated

with a Memory Window" and that other WQEs refer to this same window through an R_Key.

Applicant assumes (for the sake of argument) that a Bind Memory Window properly

corresponds to the claimed access information for the checkpoint data. Even so, *Beukema et al.*

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teaches that other DMA read and write **requests provide the R_Key to the HCA hardware**. In contrast, claim 10 recites "providing the access information **to subsequent requestors** of the checkpoint data".

Accordingly, the proposed combination of *Chung et al.* in view of *Beukema et al.* does not teach at least this feature recited in claim 10. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection should be withdrawn.

3. Independent Claim 21

Applicant respectfully submits that claim 21 is allowable for at least the reason that the proposed combination of *Chung et al.* in view of *Beukema et al.* does not disclose, teach, or suggest at least the feature "provide access information to authenticated remote processors based on address protection and translation tables in the persistent memory unit".

The Office Action acknowledges that *Chung et al.* does not teach this feature, but appears to contend that *Beukema et al.* discloses this feature, as follows:

> Beukema et al. teach the method of RDMA read and write (paragraph 0046 and paragraph 0048) and checking that the access rights specified for the Memory Region allow the access requested in the Bind (paragraph 0058) where a bind remote access key where the key is part of each RDMA access and is used to validate that the remote process has permitted access to the buffer (paragraph 0050) and the L_key is used to access the memory region's PTE which defines the characteristic of the Memory region and references the Address Translation Table that defines the virtual-to-real address mappings for the Memory Region (paragraph 0061).
> (Office Action, p. 12.)

Thus, the Office Action appears to contend that the PTE access through the L-key corresponds to the claimed "provide access information to authenticated remote processors based on address protection and translation tables in the persistent memory unit". Applicant disagrees. Applicant assumes (for the sake of argument) that the PTE contains information used to authenticate requested access to memory. Applicant further assumes (for the sake of argument) that the PTE further defines address mappings. Even so, *Beukema et al.* does not teach that

this access information is provided to remote processors, or to authenticated remote

processors.

Accordingly, the proposed combination of *Chung et al.* in view of *Beukema et al.* does

not teach at least this feature recited in claim 21. Therefore, a *prima facie* case establishing an

obviousness rejection has not been made, and the rejection should be withdrawn.

4. Claims 35-37

Independent claim 35 is cancelled without prejudice, waiver, or disclaimer. The rejection

of this claim is therefore rendered moot. Applicant reserves the right to present the subject

matter of this cancelled claim, or variants thereof, in continuing applications to be filed

subsequently. Dependent claim 37 is amended into independent form.

Applicant respectfully traverses the rejection of claim 37. The Office Action contends

(p. 16) that *Chung et al.*'s teaching of "Checkpoint server transmit last stored state to new

primary application module, fig. 1, 110, H1-6, col. 4 lines 41-48" corresponds to "transmitting the

read command to retrieve previously unread portions of the checkpoint data upon failure of the

primary process". Applicant respectfully disagrees, and submits that last stored state is not the

same as "previously unread portions of the checkpoint data".

Nor does *Beukema et al.* disclose, teach, or suggest this feature. Accordingly, the

proposed combination of *Chung et al.* in view of *Beukema et al.* does not teach at least the

above-described features recited in claim 37. Therefore, a *prima facie* case establishing an

obviousness rejection has not been made, and the rejection of claim 37 should be withdrawn.

Dependent claim 36 is amended to depend from now-independent claim 37. Since claim

37 is allowable, claim 36 is allowable for at least the reason that it depends from an allowable

claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore,

Applicant respectfully requests that the rejection of claim 36 be withdrawn.

5. <u>Dependent Claims 2-5, 7-9, 11-13, 18-19, 25, and 33</u>

Since independent claims 1, 10, and 21 are allowable, for at least the reasons discussed above, claims 2-5, 7-9, 11-13, 18-19, and 25 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Similarly, since now-independent claim 34 is allowable, for at least the reasons discussed below, claim 35 is allowable for at least the reason that it depends from an allowable claim. Therefore, Applicant respectfully requests that the rejection of claims 2-5, 7-9, 11-13, 18-19, 25, and 33 be withdrawn.

III. <u>Rejection of Claims 6 and 24 under 35 U.S.C. §103</u>

Claims 6 and 24 are rejected under §103(a) as allegedly obvious over *Chung et al.* (U.S. 6,195,760) in view of *Beukema et al.* (U.S. 2002/0124117) and *Wang* (U.S. 7,082,553). Applicant respectfully traverses this rejection. The addition of *Wang* does not cure the deficiencies of *Chung et al.* and *Beukema et al.* discussed above in connection with independent claims 1 and 21. Therefore, since independent claims 1 and 21 are allowable, Applicant respectfully submits that claims 6 and 24 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant respectfully requests that the rejection of claims 6 and 24 be withdrawn.

IV. <u>Rejection of Claims 14-16, 29-31, and 34 under 35 U.S.C. §103</u>

Claims 14-16, 29-31, and 34 are rejected under §103(a) as allegedly obvious over *Chung et al.* (U.S. 6,195,760) in view of *Beukema et al.* (U.S. 2002/0124117) and *St. Pierre et al.* (U.S. 6,141,773). Claims 29-31 are cancelled without prejudice, waiver, or disclaimer, and the rejection of these claims is therefore rendered moot. Applicant reserves the right to present

the subject matter of these cancelled claims, or variants thereof, in continuing applications to be filed subsequently. Applicant respectfully traverses the rejection of claims 14-16 and 34.

A. Claims 14 and 34

Claim 14 is allowable for the additional and separate reason that the proposed combination does not disclose, teach, or suggest "appending updated checkpoint data to at least one previous set of the checkpoint data". Claim 34 is allowable for at least the reason that the proposed combination does not disclose, teach, or suggest "appending updated checkpoint data to a previous set of the checkpoint data". The Office Action (p. 19 and 22) admits that *Chung et al.* in view of *Beukema et al.* does not teach these features but contends that *St. Pierre et al.*'s teachings of "differential backup is formed by the identified changed segments omitting at least on the segments that has not been changed (col. 5 lines 30-63)" and "differential bit file may be constructed including copies of only the changed data segments (fig. 13, 111a-111d)" corresponds to these claimed features. Applicant respectfully disagrees.

Applicant assumes (for the sake of argument) that applying a "differential bit file" in the context of checkpoints would teach that the contents of a checkpoint includes only changed state data, not all state data. Even so, storing changed checkpoint state rather than complete checkpoint state is not the same as "appending" checkpoint data "to a previous set of checkpoint data".

Accordingly, the proposed combination of *Chung et al.* in view of *Beukema et al.* and *St. Pierre et al.* does not teach at least this feature recited in claims 14 and 34. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claims 14 and 34 should be withdrawn.

B. <u>Dependent Claims 15-16</u>

The addition of *St. Pierre et al.* does not cure the deficiencies of *Chung et al.* and *Beukema et al.* discussed above in connection with independent claim 10. Therefore, since independent claim 10 is allowable, Applicant respectfully submits that claims 15-16 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant respectfully requests that the rejection of claims 15-16 be withdrawn.

V. <u>Rejection of Claim 20 under 35 U.S.C. §103</u>

Claim 20 is rejected under §103(a) as allegedly obvious over *Chung et al.* (U.S. 6,195,760) in view of *Beukema et al.* (U.S. 2002/0124117) and *Ho et al.* (U.S. 2002/0073325). Applicant respectfully traverses this rejection. The addition of *Ho et al.* does not cure the deficiencies of *Chung et al.* and *Beukema et al.* discussed above in connection with independent claim 10. Therefore, since independent claim 10 is allowable, Applicant respectfully submits that claim 20 is allowable for at least the reason that it depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant respectfully requests that the rejection of claim 20 be withdrawn.

VI. <u>Rejection of Claims 22-23 and 27 under 35 U.S.C. §103</u>

Claims 22-23 and 27 are rejected under §103(a) as allegedly obvious over *Chung et al.* (U.S. 6,195,760) in view of *Beukema et al.* (U.S. 2002/0124117) and *Stiffer et al.* (U.S. 6,662,263). Claim 27 is cancelled without prejudice, waiver, or disclaimer, and the rejection of this claim is therefore rendered moot. Applicant reserves the right to present the subject matter of this cancelled claim, or variants thereof, in continuing applications to be filed subsequently. Applicant respectfully traverses the rejection of claims 22-23. The addition of *Stiffer et al.* does not cure the deficiencies of *Chung et al.* and *Beukema et al.* discussed above in connection with

independent claim 21. Therefore, since independent claim 21 is allowable, Applicant respectfully submits that claims 22-23 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant respectfully requests that the rejection of claims 22-23 be withdrawn.

VII. Newly Added Claims

Applicant submits that new claims 38-39 are allowable over the cited references, for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant requests the Examiner to enter and allow the above new claims.

CONCLUSION

Applicant respectfully requests that all outstanding objections and rejections be withdrawn and that this application and presently pending claims 1-16, 18-25, 33-34, and 36-39 be allowed to issue. Any statements in the Office Action that are not explicitly addressed herein are not intended to be admitted. In addition, any and all findings of inherency are traversed as not having been shown to be necessarily present. Furthermore, any and all findings of well-known art and official notice, or statements interpreted similarly, should not be considered well known since the Office Action does not include specific factual findings predicated on sound technical and scientific reasoning to support such conclusions. If the Examiner has any questions or comments regarding Applicant's response, the Examiner is encouraged to telephone Applicant's undersigned counsel.

Respectfully submitted,

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